CLAIMS

What is claimed is:

1. A humanized immunoglobulin having binding specificity for $\alpha 4\beta 7$ integrin, said immunoglobulin comprising an antigen binding region of nonhuman origin and at least a portion of an immunoglobulin of human origin.

2. The humanized immunoglobulin of Claim 1, wherein the portion of an immunoglobulin of human origin is derived from a human constant region.

3. The humanized immunoglobulin of Claim 2 wherein the human constant region is of the gamma type.

4. The humanized immunoglobulin of Claim 2 wherein the antigen binding region is of rodent origin.

5. The humanized immunoglobulin of Claim 2 wherein the antigen binding region is derived from Act-1 monoclonal antibody.

6. The humanized immunoglobulin of Claim 1 wherein the antigen binding region comprises a complementarity determining region of rodent origin, and the portion of an immunoglobulin of human origin is derived from a human framework region.

7. The humanized immunoglobulin of Claim 6, wherein the complementarity determining region is derived from Act-1 monoclonal antibody.

8. A humanized immunoglobulin having binding specificity for $\alpha 4\beta 7$ integrin comprising a heavy chain and a light chain,

the light chain comprising a complementarity determining region derived from an antibody of nonhuman origin which binds $\alpha 4\beta 7$ and a framework region derived from a light chain of human origin; and

the heavy chain comprising a complementarity determining region derived from an antibody of nonhuman origin which binds $\alpha 4\beta 7$ and a framework region derived from a heavy chain of human origin.

9. The humanized immunoglobulin of Claim 8 wherein said immunoglobulin can compete with murine Act-1 for binding to $\alpha 4\beta 7$.

10. The humanized immunoglobulin of Claim 8 wherein the light chain comprises three complementarity determining regions derived from the light chain of the Act-1 antibody, and the heavy chain comprises three complementarity determining regions derived from the heavy chain of the Act-1 antibody.

11. The humanized immunoglobulin of Claim 8 wherein the light chain of human origin is the light chain of the GM607'CL antibody.

12. The humanized of Claim 8 wherein the heavy chain of human origin is the human 21/28'CL antibody.

13. A humanized immunoglobulin light chain comprising CDR1, CDR2 and CDR3 of the light chain of murine Act-1 antibody, and a human light chain framework region.

14. The humanized immunoglobulin light chain of Claim 13 wherein the human framework region is derived from the light chain of the GM607'CL antibody.

15. The humanized immunoglobulin light chain of Claim 14 comprising the variable region of SEQ ID NO:21.

16. An isolated nucleic acid encoding the humanized immunoglobulin light chain of Claim 15.

17. The isolated nucleic acid of Claim 16 comprising the variable region coding sequence of SEQ ID NO:20.

18. A humanized immunoglobulin heavy chain comprising CDR1, CDR2 and CDR3 of the heavy chain of the Act-1 antibody, and a human heavy chain framework region.

19. The humanized immunoglobulin heavy chain of Claim 18 wherein the human framework region is derived from the heavy chain of the human 21/28'CL antibody.

20. The humanized immunoglobulin heavy chain of Claim 19 comprising the variable region of SEQ ID NO:19.

21. An isolated nucleic acid encoding the humanized immunoglobulin heavy chain of Claim 20.

22. The isolated nucleic acid of Claim 21 comprising the variable region coding sequence of SEQ ID NO:18.

23. A humanized immunoglobulin light chain, said light chain having an amino acid sequence comprising at least a functional portion of the light chain variable region amino acid sequence shown in Figure 7 (SEQ ID NO:12).

24. A humanized immunoglobulin light chain of Claim 23, said light chain having an amino acid sequence comprising the signal peptide sequence shown in Figure 7 (SEQ ID NO:12) and at least a functional portion of the light chain variable region amino acid sequence shown in Figure 7 (SEQ ID NO:12).

25. An isolated nucleic acid comprising a sequence encoding a humanized immunoglobulin light chain of Claim 23.

26. The isolated nucleic acid of Claim 25 comprising the variable region coding sequence of SEQ ID NO:11.

27. A humanized immunoglobulin heavy chain, said heavy chain having an amino acid sequence comprising at least a functional portion of the heavy chain variable region amino acid sequence shown in Figure 9 (SEQ ID NO:15).

28. A humanized immunoglobulin heavy chain of Claim 27, said heavy chain having an amino acid sequence comprising the signal peptide sequence shown in Figure 9 (SEQ ID NO:15) and at least a functional portion of the heavy chain variable region amino acid sequence shown in Figure 9 (SEQ ID NO:15).

29. An isolated nucleic acid encoding the humanized immunoglobulin heavy chain of Claim 27.

30. The isolated nucleic acid of Claim 29 comprising the variable region coding sequence of SEQ ID NO:14.

31. An expression vector comprising a fused gene encoding a humanized immunoglobulin light chain, said gene

comprising a nucleotide sequence encoding a CDR derived from a light chain of a nonhuman antibody having binding specificity for $\alpha 4\beta 7$ integrin and a framework region derived from a light chain of human origin.

32. The expression vector of Claim 31, wherein the nonhuman antibody is murine Act-1 antibody.

33. A host cell comprising the expression vector of Claim 31.

34. An expression vector comprising a fused gene encoding a humanized immunoglobulin heavy chain, said gene comprising a nucleotide sequence encoding a CDR derived from a heavy chain of a nonhuman antibody having binding specificity for $\alpha 4\beta 7$ integrin and a framework region derived from a heavy chain of human origin.

35. The expression vector of Claim 34, wherein the nonhuman antibody is murine Act-1 antibody.

36. A host cell comprising the expression vector of Claim 34.

37. A host cell comprising a first recombinant nucleic acid encoding a humanized immunoglobulin light chain and a second recombinant nucleic acid encoding a humanized immunoglobulin heavy chain,

said first nucleic acid comprising a nucleotide sequence encoding a CDR derived from the light chain of murine Act-1 antibody and a framework region derived from a light chain of human origin; and

said second nucleic acid comprising a nucleotide sequence encoding a CDR derived from the heavy chain of murine Act-1 antibody and a framework region derived from a heavy chain of human origin.

38. A method of preparing a humanized immunoglobulin comprising maintaining a host cell of Claim 37 under conditions appropriate for expression of a humanized immunoglobulin, whereby humanized immunoglobulin chains are expressed and a humanized immunoglobulin is produced.

39. The method of Claim 38 further comprising the step of isolating the humanized immunoglobulin.

40. A fused gene encoding a humanized immunoglobulin light or heavy chain comprising:

a) a first nucleic acid sequence encoding an antigen binding region derived from murine Act-1 monoclonal antibody; and

b) a second nucleic acid sequence encoding at least a portion of a constant region of an immunoglobulin of human origin.

41. A method of inhibiting the interaction of a first cell bearing $\alpha 4\beta 7$ with a second cell bearing a ligand thereof, comprising contacting said first cell with an effective amount of a humanized immunoglobulin of Claim 1.

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42. A method of inhibiting leukocyte infiltration of mucosal tissue, comprising administering to a patient an effective amount of a humanized immunoglobulin of Claim 1.

43. A method of therapy of a disease associated with leukocyte infiltration of tissues expressing the molecule MAdCAM-1, comprising administering to a patient an effective amount of a humanized immunoglobulin of Claim 1.

44. The method of Claim 43, wherein the disease is a disease associated with leukocyte infiltration of tissues as a result of binding of leukocytes to gut-associated endothelium expressing the molecule MAdCAM.

45. A method for treating inflammatory bowel disease in a patient, comprising administering to the patient an effective amount of a humanized immunoglobulin of Claim 1.